

the synthesis steps are carried out in a non-oxidizing atmosphere having less than 5 ppb ozone, and wherein said non-oxidizing atmosphere is an atmosphere that produces less than 10% degradation of said nucleic acids over a period of 1 hour at a temperature of from 18°C to 25°C.

A 2 3 (Amended) A method in accordance with claim 1, wherein said synthesizing comprises the sequential steps of:

- a) generating a pattern of light and dark areas by selectively irradiating at least a first area of a surface of a substrate, said surface comprising immobilized nucleotides on said surface, said nucleotides capped with a photoremovable protective group, without irradiating at least a second area of said surface, to remove said protective group from said nucleotides in said first area;
- b) simultaneously contacting said first area and said second area of said surface with a first nucleotide to couple said first nucleotide to said immobilized nucleotides in said first area, and not in said second area, said first nucleotide capped with said photoremovable protective group;
- c) generating another pattern of light and dark areas by selectively irradiating with light at least a part of said first area of said surface and at least a part of said second area to remove said protective group in said at least a part of said first area and said at least a part of said second area;
- d) simultaneously contacting said first area and said second area of said surface with a second nucleotide to couple said second nucleotide to said immobilized nucleotides in at least a part of said first area and at least a part of said second area;
- e) performing additional irradiating and nucleotide contacting and coupling steps so that a matrix array of at least 100 nucleic acids having different sequences is formed on said support;

with the proviso that steps (a) through (e) are performed in said non-oxidizing atmosphere, and said atmosphere has an ozone concentration of less than 5 ppb.

A 3

Sub
B1

7. (Amended) A method in accordance with claim 3, wherein said substrate is a planar support and is irradiated with light directed from a source at a position opposite the surface comprising said immobilized nucleotides.

8. (Amended) A method in accordance with claim 3, wherein said substrate is a planar support and is irradiated with light directed from a source on the same side of the surface comprising said immobilized nucleotides.

Sub
B2

9. (Amended) A method in accordance with claim 3, wherein said substrate is a planar support and is irradiated with light from a position opposite the surface comprising said immobilized nucleotides and said atmosphere is an inert gas atmosphere.

A 4

11. (Amended) A method in accordance with claim 10, wherein each of said steps is conducted in an atmosphere comprising less than 5 ppb ozone.

A 5

13. (Amended) A method of preparing a nucleic acid array, said method comprising attaching each of a plurality of nucleic acids to a solid support at preselected locations to provide said array, wherein said attaching is carried out in a non-oxidizing atmosphere having less than 5 ppb ozone, and wherein said non-oxidizing atmosphere produces less than 10% degradation over a period of 1 hour at a temperature of from 18°C to 25°C.

14. (Canceled)